THE JEPSON GLOBE

VOLUME 1 NUMBER 4 *A Newsletter from the Friends of the Jepson Herbarium* 1987

THE HISTORY OF HERBARIA

California

John Hunter Thomas
Professor of Biological Sciences
Stanford University

The first institutional herbarium in California for which we have records was that of the California Academy of Sciences in San Francisco. Unfortunately, most of these specimens were destroyed in the fire after the 1906 earthquake. Fortunately, Alice Eastwood had segregated the type specimens and was able to take them to safety. She was able to save about 2000 specimens, although this figure may not be accurate. Saving those types and a few other specimens saved several generations of systematists countless hours of time and effort. Since 1906 the California Academy of Sciences Herbarium has been rebuilt to its present number of about 750,000 specimens.

Pomona College established an herbarium in 1864 and the University of California (we did not need to add Berkeley in those days) started its herbarium in 1872. The San Diego Museum of Natural History Herbarium came into being in 1874 and was followed by that of the Pacific Grove Museum of Natural History in 1881.

The herbarium of Stanford University was started in 1891 and became known as the Dudley Herbarium of Stanford University, by action of the University Trustees, following the death of Professor William Russel Dudley in 1911.

Four of the above herbaria, California Academy of Sciences, Pomona College,

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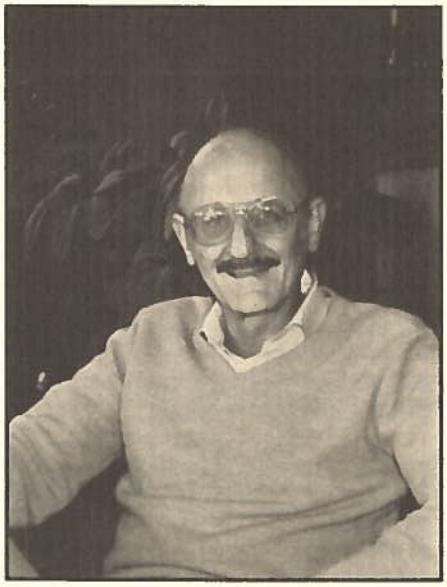

Larry Heckard

BIOGRAPHICAL SKETCH

Dr. Lawrence R. Heckard

Curator of the Jepson Herbarium.

Although Larry Heckard was keenly interested in plants as a teenager, it was only during his early graduate studies at Berkeley that he became convinced that he could make a career of such a fascinating subject as plant taxonomy. His youth was spent close to nature on the sandy peninsula north of the mouth of the Columbia River, but in those depression years he was busily involved in the practical pursuits of harvesting cranberries, razor clams, and oysters (knee-deep in mud). Before his teens he was displaying a precocious interest in plants by peddling

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STALKING THE WILD MONKEYFLOWER

David Thompson
Taxonomist
Rancho Santa Ana Botanic Garden

Our list of authors in the last issue of the Globe included many familiar names of eminent authorities whose contributions will be a valued part of The Jepson Manual. *Some less familiar names include young people just starting in the field of taxonomy. We thought you'd enjoy this account by one of them. David Thompson received his Ph.D. in 1986 at U.C.Berkeley.*

Perhaps in a moment of insanity, I took the challenge of providing the treatment of *Mimlus* (monkeyflowers) for the Jepson Manual Project late in 1985 while writing my doctoral dissertation, a monograph on *Antirrhinum* (snapdragons) of the New World. With over 90 species in California, monkeyflowers belong to the sixth largest genus of vascular plants in the state; over 50 of the species are endemic.

Treatments of *Antirrhinum*, *Galvezia*, *Maurandya*, and *Mohavea* (Scrophulariaceae) would be easy for me to provide for the flora, but I was familiar with only two species of *Mimulus*! I soon realized that monkeyflower species are most often distinguished by floral characters, yet I found flowers to be poorly preserved on dried material—I needed to get into the field to see living populations.

So, after compiling locality data from the herbarium sheets (3 1/2 cases) at UC Berkeley and finishing my dissertation, I took off in May for what turned out to be a 5-month crash course on *Mimulus*, with 13,700 miles of nearly continuous field travel in California. I thank the anonymous donor for the $1000 grant for this project, a project that will result in an improved treatment of the California species

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Thomas, cont. from p. 1

Dudley Herbarium of Stanford University, and the University of California, plus those of the Rancho Santa Ana Botanic Garden, established in 1927, and the Jepson Herbarium, formally so designated in 1950, account for about two thirds (65-69%) of the 5,927,621 specimens in the 149 separate collections now in California.

The growth in the number of herbaria and working collections in California is quite interesting. The following table shows such foundings per decade from 1850 through 1987. The post World War II years clearly show a big increase and can, I think, be correlated with an increased interest in the environment by Californians. Dates of founding for several are unknown or uncertain.

1850-60	*1*	1920-30	*12*
1860-70	*0*	1930-40	*17*
1870-80	*2*	1940-50	*9*
1880-90	*1*	1950-60	*24*
1890-00	*2*	1960-70	*44*
1900-10	*4*	1970-80	*14*
1910-20	*4*	1980-86	*2*

Botanical collecting started in California in 1786 with the La Pérouse Expedition which spent 10 days at Monterey. Although the Expedition eventually floundered in the Solomon Islands, a short account of the vegetation around Monterey and a packet of seeds containing what Lamarck named *Abronia umbellata*, the pink sand verbena, reached France.

Many other collectors from Europe followed. Among them were such well known figures as Douglas, Menzies, Eschscholz, Chamisso, Haenks, Scouler, Collie, Coulter, and Hinds, to mention a few. The results of their work went to Europe.

Then about mid-century came the wave of collectors from eastern North America: Gambel, Wyeth, Brackenridge, Fremont, Parry, Thurber, Newberry, Bigelow, Palmer, Torrey, Watson, and yes, even Asa Gray. But again, few of their collections stayed in California.

The California Gold Rush brought an influx of people, not only miners, but business people, trades people, farmers, lawyers, medical doctors, teachers and preachers. Schools and colleges were founded as well as other social institutions. An interest in the local natural history developed and such institutions as the California Academy of Sciences came into being. The day of "home exploration" was at hand. Albert Kellogg, a founding member of the California Academy of Sciences, was a good example of a resident naturalist.

From the Gold Rush days on, there was a number of large "personal" herbaria which went eventually to the larger California institutional herbaria. A few of them were the collections of Samuel B. Parish, T. S. and M. K. Brandegee, Marcus E. Jones, Charles F. Baker, Ira Clokey, and J. P. Tracy. Many smaller collections, staff collections, and exchanges have enriched our California herbaria. But even so, there is only about one herbarium specimen for every four residents of California.

One of the most important California collections ever assembled was that of Willis Linn Jepson. It became the nucleus of the Jepson Herbarium when it was formally established in 1950 as a consequence of Dr. Jepson's will. Dr. Jepson considered "his herbarium" to be his personal private property and it along with his library and other papers were given to the University of California (by now needing the Berkeley after it). It is interesting that Dr. Jepson was the first person to receive a Ph.D. in botany from the University of California. This was in 1899.

Dr. Jepson's major works, *A Flora of Western Middle California* (1901, second edition in 1911), *A Flora of California* (1909-1939, incomplete), *A Silva of California* (1910), and a *Manual of the Flowering Plants of California* (1923, 1925) "established him not only as the principal interpreter of the California flora but also as one of the greatest American regional botanists" (L. Constance, Science 105(2737): 614. June 13, 1947). These and other works were based in large part on what is now The Jepson Herbarium.

General references for this paper:

Barbe, G. D., and T. C. Fuller. 1987. List of California Herbaria and Working Collections. State of California, Department of Food and Agriculture, Sacramento.

Thomas, J. H. 1969. Botanical Exploration in Washington, Oregon, California and adjacent Regions. Huntia 3:5-62

NEXT ISSUE:

Biographical Sketch:
Dr. Robert Patterson
Family Editor, Polemoniaceae
Barbara Ertter on:
"How to run an Herbarium"

Thompson cont from p 1

for *The Jepson Manual* as well as subsequent monographic works on sections of this difficult genus.

Some of the exciting aspects of doing this field work on a limited budget included sleeping in a "fetal crouch" (analysis of Stan Welsh when I met him in Utah) in the back of a little Subaru wagon (I'm 6'3") every night for five months, waking up periodically to find ticks crawling across my face, going a week at a time without a shower despite searching for plants in intense heat, and eating cold roast beef hash from the can. Then, there were the hazards of field work, such as nearly driving off the side of a mountain because the road had slid off the previous winter, nearly falling into an open well, stepping on a large rattlesnake while more than 4 miles from my car and farther from civilization, losing my car in the desert, being attacked by vicious dogs, and being purposely run off the road by a deranged farmer in his pickup truck.

Mimulus tricolor from Jepson's 1925 *Manual*

Despite these problems, specimens from over 350 populations representing 65 of the herbaceous species of monkeyflowers were collected during the 1986 season. An overall treatment of the Californian species for *The Jepson Manual* is only the beginning of the work initiated by these field studies. My sequential monographic studies of sections of the genus, on a world wide scale, will be a continuing source of new information on these beautiful plants. Improved keys, descriptions, illustrations, and distribution maps will eventually become available. Finally, our knowledge of the ecology, evolution, and horticultural value of these showy plants will be gradually enriched by these biosystematic studies. The monkey business has just begun! ■

MANUAL UPDATE

James C. Hickman
Editor, The Jepson Manual Project

FINANCIAL STATUS OF THE JEPSON MANUAL PROJECT

OVERALL FINANCIAL SUMMARY:

A small, endowed unit housed by UC Berkeley, The Jepson Herbarium has an annual income of about $70,000. Its monetary resources cannot begin to cover the estimated $6.3 million cost of the 10-year Jepson Manual Project.

The largest portion of this cost — more than 70% — does not involve direct money exchanges, because it is simply the value of time volunteered by many professional botanists. The 200 contributing authors and feature coordinators have committed at least $4.5 million in volunteered professional time — a real cost (estimated very conservatively here) that is readily overlooked but shows an astonishing level of professional commmitment to this project.

Because of this immense contribution in time, only $1.8 million in money is needed to complete the project. Most of this has already been committed:

— The Jepson Herbarium has committed nearly $500,000 (more than two-thirds of its income) over the 10-year life of the project.

— The State of California has provided $300,000 through the Environmental Protection Program (License Plate Funds).

— The Stanley Smith Horticultural Foundation is supplying nearly $150,000 over four years to cover most of the costs of producing the horticultural and rare plant treatments.

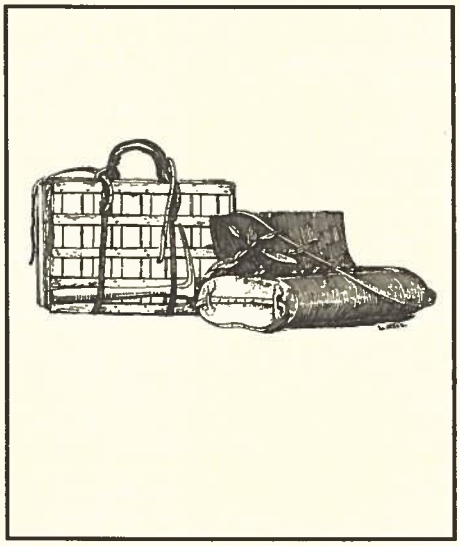
— Friends of The Jepson Herbarium have donated nearly $70,000.

These monetary commitments total $1 million, leaving $800,000 to be raised over the next four years.

Possible funding sources are many and our ability to find them continues to grow. We are just beginning to approach corporations, many of which will need to use and rely on *The Jepson Manual*. We expect to have further support from foundations and to find one or more individual donors of substantial amounts.

There is currently a major thrust to write a *Flora of North America*. Because about one-third of North American species grow in California, our project is central to the success of the continent-wide effort. We hope to interest the National Science Foundation in supporting parts of The Jepson Manual Project that will enhance *Flora of North America*.

These possibilities notwithstanding, **the role of small individual donors cannot be underestimated**, because it is from **you** that the measure of our support and public backing can be taken. That you are loyally supportive will encourage other donors to follow suit, according to their resources. Our job is large. Even though yours may be relatively small, it is very important. Please continue your support!



Drawing of Jepson's plant press and vasculum (a metal box for holding plants). From *The Trees of California*, Willis Linn Jepson, 1923.

$300,000 CONTRACT FROM STATE:

UC Berkeley has accepted a contract for $300,000 from the California Environmental Protection Program (License Plate Funds) for The Jepson Manual Project. The contract is administered by the California Department of Fish & Game and is the first direct State funding for the project. We are gratified and challenged by it. For two fiscal years, 1987-89, these funds will support most staff salaries part time as well as some operations. We have been able to add two new staff positions. With other available or foreseeable funds, the project is secure until December 1989; nearly all costs for the final three years still must be found.

Many of you gave us logistical or moral support in obtaining this contract. Unfortunately, even such a large sum does not meet the financial needs of the project. Any undertaking of this magnitude is very expensive, and is possible only because of immense contributions — large and small, in money or in time — from outside The Jepson Herbarium. Because of the number and diversity of volunteers on which the project depends, staff with many different kinds of expertise must be on hand to coordinate their efforts toward the anticipated end.

Do not let the magnitude of remaining needs lead you to conclude that YOUR support is insignificant! The grass-roots support you and other Friends provide will allow us to find the additional funding required to produce a landmark final product.

NEW STAFF IN THE JEPSON MANUAL PROJECT

JEANNE VISNAW — NEW ADMINISTRATIVE ASSISTANT:

Jeanne began work half-time on 16 November. During morning hours, hers is the pleasant voice answering your call. Besides being our receptionist, Jeanne's duties relate to accounting, budget planning, purchasing, and record keeping. Her smile helps us all!

DR. THOMAS ROSATTI — NEW SCIENTIFIC EDITOR:

One of the new positions made possible by the Environmental Protection contract is that of Scientific Editor. Tom Rosatti was selected from a superb pool of applicants and began work on 1 December 1987, the "half-way anniversary" of the project.

Tom's dissertation at the University of Michigan was on the *Arctostaphylos uva-ursi* (bear-berry) complex. For the past four years he has been an author and editor for the Generic Flora of the Southeast, working with Dr. Carroll Wood of Harvard and most closely with Dr. Norton Miller at the New York State Museum, Albany. As Scientific Editor, Tom will evaluate draft treatments, refine text formats and conventions, edit, and communicate with the 150 taxonomic authors.

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Supported by the California Native Plant Society and California Botanical Society

Heckard, cont from p 1

vegetables from the home garden!

As a horticulture major at Oregon State University, he was intrigued with courses in plant identification, and here he made his first Jepson connection when taking taxonomy from Helen Gilkey, who had a PhD from Berkeley and had done art work for Professor Jepson.

In 1948, Larry entered UC Berkeley with many other World War II veterans. As a botany graduate student, he was stimulated by classes and contacts with professors Lincoln Constance, Herbert Mason, and Ledyard Stebbins and soon plunged into a dissertation under their guidance. His study was of *Phacelia magellanica* and its relatives, a puzzling group that had received diverse taxonomic treatments. Larry provided an evolutionary explanation that became a well known textbook example of taxonomic complexity.

Larry has had a long association with the Jepson Herbarium. Professor Jepson (1867-1946) had bequeathed to the University his herbarium and funding for continued research. Larry's office as a graduate student was part of Professor Jepson's former quarters. The Jepson Herbarium was opened in 1950 with Dr. Rimo Bacigalupi as Curator. Larry was soon tagging along on field trips with "Batch," who became an important mentor in the joys and complexities of the California flora.

In 1960, after five years as Assistant Professor at the University of Illinois, Larry happily returned to work with Bacigalupi in organizing the rich herbarium resources left by Jepson. The Jepson Herbarium and Library, in renovated quarters, opened fully to the public in 1963. Larry became Curator when Bacigalupi retired in 1968.

The research program of the Jepson Herbarium staff focused on those plant families not yet published in Jepson's multivolumed *Flora of California*. Larry first worked on the Broomrape family (Orobanchaceae) and then joined Bacigalupi in studying the related Figwort family (Scrophulariaceae).

In this work, Larry was joined by another of Lincoln Constance's former graduate students, Prof. T. I. Chuang of Illinois State University and his wife, Fei-Mei. Changes based on Larry's research with the Chuangs on the notoriously difficult Indian paintbrushes (*Castilleja*) and Owl's clovers (*Orthocarpus*) will appear in *The Jepson Manual*. Their collaborative studies also led to a complete revision of Birds-beak (*Cordylanthus*), a genus with many rare species. Efforts to save these plants have led Larry to lengthy involvement with the California Native Plant Society and government agencies.

Larry hoped for many years to find the time to revise Jepson's *Manual of the Flowering Plants of California* (1925). In 1980, Larry invited Dr. James Hickman to join him in a study of the flora of Snow Mountain in the North Coast Ranges. Larry had first visited this fascinating region in 1957 with Bacigalupi and Philip Munz. Larry and Jim found that many of the descriptions and keys in Munz's *A California Flora* did not work well in this part of the state, so Larry's fond dream of revising Jepson's *Manual* became a topic of discussion while the two hiked the trails. Larry's encouragement of Jim's interest in the project bore fruit, and Larry has continued to be at the center of involvement; he serves as Chairman of the Editorial Board and is preparing treatments for many genera of Figworts and their relatives.

While Larry's biosystematic studies and his service as Secretary of the American Society of Plant Taxonomists made him well known nationally, he has endeared himself to countless California botanists, both professional and amateur, by his sympathetic encouragement. He has stimulated the use of Jepson Herbarium resources and shared the wealth of information he has gleaned from botanical excursions to various nooks and crannies of the state. ■

Paul C. Silva

Paul is a long-time friend of Larry's and colleague in the University Herbarium at Berkeley. He is an internationally known phycologist (specialist on algae)

NEWS OF AUTHORS:

Dr. Theodore M. Barkley

In addition to the honor announced in the last *Globe*, Dr. Barkley recently received the New York Botanical Garden's Henry Allan Gleason Award, for his Editorship of *Flora of the Great Plains*. This award is made annually for outstanding publication in plant taxonomy.

Dr. Reed C. Rollins

Prof. Rollins, of Harvard University, is the fourth recipient of the Asa Gray Award from the American Society of Plant Taxonomists. This is the most prestigious award given in plant systematics and acknowledges a lifetime of outstanding accomplishment. Dr. Rollins is writing more than 200 species of the important Mustard Family (Brassicaceae) for *The Jepson Manual.*

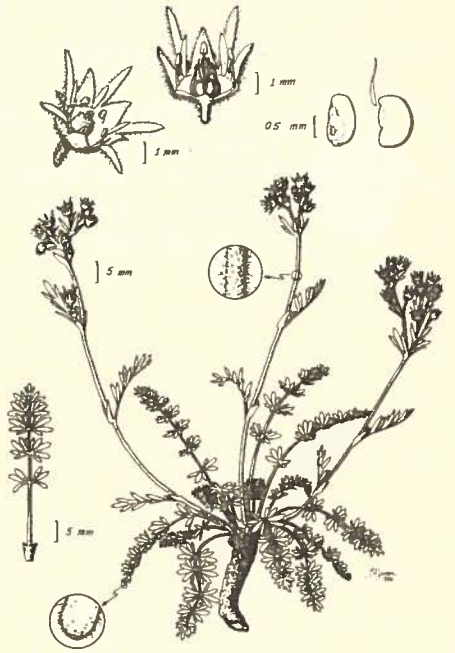
Staff cont. from p. 3

DR. LINDA VOROBIK — NEW BOTANICAL ILLUSTRATOR

The accompanying illustration, Castle Crags Ivesia, is one of many recently discovered species that will appear in *The Jepson Manual.* It was drawn by the newest member of our staff, Dr. Linda Vorobik.

A talented artist and research botanist, Linda started work in February. Illustration needs are increasing as text is submitted more rapidly and as our publication date gets closer. She will share responsibility for illustrations with our current artist, Emily Reid.

Linda hails from Seattle, and was fortunate to spend her summers on beautiful and peaceful Lopez Island in the San Juan Islands. She obtained a Ph.D. at the University of Oregon, studying reproductive biology of the species of *Arabis* in the Siskiyou Mountains of Oregon. She continues her interest in *Arabis.*



Castle Crags Ivesia

Linda was employed for two years as illustrator for the Botany Department at The University of Texas in Austin. Most recently she has been working as a freelance illustrator, with her fine illustrations gracing the pages of numerous scientific journals. ■

HERBARIUM NEWS

Friends Volunteers

Thanks to **Mary Breunig** of Berkeley for agreeing to organize our representation at the San Francisco Landscape Garden Show in April. The show is at the Fort Mason Center in San Francisco, April 14 - 17. If any of you would like to help Mary, contact her at home, 415/549-0689; or call the Jepson Herbarium, 643-7008 Mon. - Fri.

Stebbins to Lead Sierra Nevada Fieldtrip

Prof. G. Ledyard Stebbins will lead a small group of Friends on a field trip to Wright's Lake, one of his favorite areas in the Sierra Nevada. Dr. Stebbins and **Judy Hutchinson** published *A Flora of the Wright's Lake Area*, Cal Central Press, 1986.

The dates are July 8 - 10, 1988.

Participants will have the choice of camping, sleeping in the loft of the Stebbins' cabin, or staying in a local motel. There will be a barbecue Saturday night on the Stebbin's porch.

A contribution of $50.00 to the Friends is requested. Limited to 15. Please call the Jepson Herbarium to reserve a place. 415/643-7008.

Friends Pins

Great news! We've just ordered Friends pins. A 3/4 inch circle with our logo in gold on a field of blue (just like the logo on the cover of Jepson's original *Manual).*

They are beautiful ..... and just $4.00 each. Look for them at various botanical and wildflower get-togethers. (We'd like to sell them by mail, but need a volunteer to organize the process and do the paper work. Interested? Call Susan at 643-7008)

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